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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/591,326

08/31/2006

Naoki Nishiura

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POSZ LAW GROUP, PLC
12040 SOUTH LAKES DRIVE
SUITE 101
RESTON, VA 20191

EXAMINER

FANG, SHANE

ART UNIT

PAPER NUMBER

1796

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DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.		Applicant(s)	
	10/591,326		NISHIURA ET AL.	
	Examiner		Art Unit	
	SHANE FANG		1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 April 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10 and 12-32 is/are pending in the application.
- 4a) Of the above claim(s) 1-6 and 17-32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7, 8, 10 and 12-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Since this application is eligible for the transitional procedure of 37 CFR 1.129(a), and the fee set forth in 37 CFR 1.17(r) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.129(a). Applicant's first submission after final filed on 04/05/10 has been entered.

Response to Amendment

- The amendment of claims 7 and 16 is supported by the original claims.
- All previous 102 and 103 rejections of claims 7-8, 10, and 12-16 have been overcome by the amendment and withdrawn.

Claim Rejections - Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claims 7-8, 10, and 12-16 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 4-8 of copending Application No. 12/441980. This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

980' (claims 1 and 4-8) discloses a composition of polyamic acid and carbon black (20-30 wt%) and a process of producing semiconductive polyimide resin belt by rotationally molding thereof, wherein the polyamic acid obtained by reacting asymmetric 10-80 mol% dianhydride reacts with diamines at substantially equimolar amount. One of ordinary skill in the art would at once envisage the symmetric dianhydride would be 20-90 mol%, because diamine would be 100 mol%. These two dianhydride ranges are sufficiently specific to anticipate the claimed range of 15-55 mol% of asymmetric dianhydride and 45-85 mol% of symmetric dianhydride. The said polyamic acid can be oligomer having M_w of 30 k or less, a range overlaps with claimed range of M_n of 1k to 7k. It has been found that where claimed ranges overlap ranges disclosed by the prior art, a *prima facie* case of obviousness exists - see MPEP 2144.05.

980' is silent on the reaction temperature of claims 8 and 10. However, claims 8-9 are product-by-process claims that are limited by and defined by the product. Determination of patentability is based on the product itself, not on its method of production. See MPEP § 2113. Instant 0170-0174 indicates these reaction

temperature ranges are used to produce oligomers having M_n of 1k to 7k. In this particular case, the resultant oligomeric polyamic acid meets the chemical and molecular weight requirement of claims 8 and 10.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 7-8, 10, and 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanetake et al. (US 6303054, listed on previous 892) in view of Economy et al. (US 4467000) and in further view of Hasegawa et al. (Macromolecules 1999, 387-396 as listed on IDS) and evidenced by Wilson et al. (Polyimide, Blackie & Son Ltd, 1990, Pg. 1-2, scheme 1.2, listed on previous 892).

Disclosure of Kanetake, Hasegawa, and Wilson are adequately set forth in past actions and is incorporated herein by reference.

As to claims 7-8, 10, and 12-16, Kanetake discloses a process of produce semiconductive seamless tubular polyimide films for intermediate belt member for transfer in a copy machine by rotational molding polyamic acid composition in NMP followed by heating (5:30-68, 6:1-55), wherein the polyamic acid composition contains carbon black uniformly dispersed in polyamic acid (4:55) and equivalent amount of diamine and dianhydride is reacted (Ex.1). Kanetake further discloses a polyamic acid

composition of molded product comprising a preferable 7-8% parts of carbon black by weight per 100 parts of polyamic acid (4:30-50) to obtain semiconductivity (electrical resistivity $10-10^{14} \Omega\text{cm}$) in polyamic acid composition (3:54-58) and high stability of resistivity (5:49-52)

Kanetake is silent on polyamic acid being oligomeric and prepared from multiple asymmetric and symmetric dianhydrides.

Economy (claims 1-8, 5:5-20, 4:5-65, 3:55-70, 1:5-35, 2:15-30) discloses a composition comprising oligomeric polyamic acid and ester. Said polyamic acid is PMDA-ODA only having structural units of dianhydride or its derivatives and diamine; said oligomer has a MW of 1-5k. Economy does not define MW as M_n as recited in instant claim 7 or M_w . However, Economy discloses DP can be 2.5. In light of this, the disclosed M_n can be 1-5k (sufficiently specific to anticipate) or 400-2k (overlapping). It has been found that where claimed ranges overlap ranges disclosed by the prior art, a *prima facie* case of obviousness exists - see MPEP 2144.05. Both ranges meet the claimed range of M_n of 1k-7k. Economy further discloses the composition would yield a polyimide film and coating with good planarization, mechanical and thermal stability, and excellent flexibility.

Hasegawa discloses a polyimide prepared by blend of a first polyamic acid (symmetric dianhydride (s-BPDA) with diamine) (80%) and a second polyamic acid (asymmetric dianhydride (a-BPDA) with diamine) (20%) to improve the thermal processability of polyimide based on BPDA/diamine without decreasing the T_g (Abs.). Hasegawa discloses the polyimide has improved mechanical properties compared to

polyimide based on PMDA/ODA can be used in films and composite (§1, P.387). Hasegawa et al. discloses the blend is carried out by blending S-BPDA based polyamic acid with a-BPDA based polyamic acid (§1, P.388). As evidenced by Wilson et al., the blending would results in a polyamic acid composition having same structure and reaction sequence as recited in claims 9 and 11. Wilson shows the synthetic routes of the application and reference are both 2-step method, where in polyamic acid is prepared first and cured to polyimide. Note the reaction of forming polyamic acid is a reversible process. This implies that said blending would result in reaction of a-BPDA and s-BPDA with diamine with molecular rearrangement on the backbone, and the resultant polyamic acid approximately equal to S-BPDA(80%)/a-BPDA/(20%)/PPD-diamine.

Therefore, as to claims 7-8, 10, and 12-16, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the composition and process disclosed by Kanatake, replaced the polyamic acid with the oligomeric polyamic acid composition in view of Economy, and further replaced the PMDA-ODA polyamic acid of Economy with the asymmetric/symmetric dianhydride ratio in view of Hasegawa, because the resultant composite film would have improved good planarization, thermal stability, and excellent flexibility, thermal processability and retained T_g , and further improved mechanical properties.

Particular to claim 8, all four references discloses or implies the reaction at room temperature. All four references are silent on the reaction temperature of claim 10. Claims 8 and 10 are product-by-process claims that are limited by and defined by the

product. Determination of patentability is based on the product itself, not on its method of production. See MPEP § 2113. Instant 0170-0174 indicates these reaction temperature ranges are used to produce oligomers having M_n of 1k to 7k. In this particular case, the resultant oligomeric polyamic acid meets the chemical and molecular weight requirement of claims 8 and 10.

Response to Arguments

Applicant's arguments with respect to all elected claims have been considered but are moot in view of the new ground(s) of rejection. All previous rejections have been withdrawn.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SHANE FANG whose telephone number is (571)270-7378. The examiner can normally be reached on Mon.-Thurs. 8 a.m. to 6:30 p.m. EST.. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

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published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Sf

/RANDY GULAKOWSKI/
Supervisory Patent Examiner, Art Unit 1796